



## General

### Guideline Title

Guideline for surgical attire.

### Bibliographic Source(s)

Spruce L, Van Wicklin SA, Conner RL. Guideline for surgical attire. In: 2015 guidelines for perioperative practice. Denver (CO): Association of periOperative Registered Nurses (AORN); 2014. p. 97-120. [123 references]

### Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

## Recommendations

### Major Recommendations

Note from the Association of periOperative Nurses (AORN): The original guideline document provides guidance for surgical attire including scrub attire, shoes, jewelry, head coverings, and masks worn in the semi-restricted and restricted areas of the perioperative practice setting. The original guideline document also provides guidance for personal items such as stethoscopes, backpacks, briefcases, cell phones, and tablets.

The original guideline document does not address patient clothing or linens used in health care facilities. A complete discussion of the use of personal protective equipment (PPE) and sterile attire worn at the surgical field is outside the scope of the original guideline document. Refer to the National Guideline Clearinghouse (NGC) summaries of the AORN guidelines: [Recommended practices for sterile technique](#), [Recommended practices for prevention of transmissible infections in the perioperative practice setting](#), and [Recommended practices for sharps safety](#) for additional information. The use of nail polish, artificial nails, or other nail enhancements and the recommended fingernail length for perioperative personnel is outside the scope of the original guideline document. Refer to the AORN Guideline for Hand Hygiene for additional information. Ensuring and monitoring personnel compliance with policies and procedures for surgical attire and personal hygiene is a responsibility of the facility or health care organization administrators.

- I. Clean surgical attire should be worn in the semi-restricted and restricted areas of the perioperative setting.
- II. All individuals who enter the semi-restricted and restricted areas should wear scrub attire that has been laundered at a health care-accredited laundry facility or disposable scrub attire provided by the facility and intended for use within the perioperative setting.
- III. Personnel entering the semi-restricted and restricted areas should cover the head, hair, ears, and facial hair.

### Clinical Algorithm(s)

None provided

## Scope

### Disease/Condition(s)

Surgical and other invasive procedures

### Guideline Category

Prevention

Risk Assessment

### Clinical Specialty

Nursing

Surgery

### Intended Users

Advanced Practice Nurses

Nurses

### Guideline Objective(s)

- To provide guidance for surgical attire including scrub attire, shoes, jewelry, head coverings, and masks worn in the semi-restricted and restricted areas of the perioperative practice setting
- To provide guidance for personal items such as stethoscopes, backpacks, briefcases, cell phones, and tablets

### Target Population

Any patient undergoing surgical or other invasive procedures

### Interventions and Practices Considered

1. Clean surgical attire
2. Laundered or disposable scrub attire worn by all individuals who enter semi-restricted and restricted areas
  - Laundered in health care-accredited laundry facility
  - Intended for use in the perioperative setting
3. Clean surgical head covering for head, hair, ears, and facial hair

### Major Outcomes Considered

- High level of cleanliness and hygiene within the perioperative environment
- Patient and worker safety
- Patient exposure to microorganisms

- Surgical site infection (SSI)

## Methodology

### Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

### Description of Methods Used to Collect/Select the Evidence

#### Evidence Review

On June 25 and June 27, 2013, a medical librarian conducted a systematic search of the databases MEDLINE® and CINAHL® and the Cochrane Database of Systematic Reviews for meta-analyses, systematic reviews, randomized controlled and non-randomized trials and studies, case reports, letters, reviews, and guidelines. The librarian also searched the Scopus database, although not systematically. The search was limited to literature published in English from January 2008 through June 2013.

Search terms included *surgical attire, clothing, personal protective equipment, protective gloves, respiratory protective devices, masks, eye protection, goggles, scrubs, surgical gown, jumpsuit, head covering, surgical cap, hoods, coveralls, bunny suit, textiles, bedding and linens, privacy curtain, hospital laundry service, laundering, laundry, washing machine, tie, backpack, fanny pack, fleece, briefcase, purse, stethoscope, lanyard, badge, patient attire, patient clothing, colonization, fomites, tattooing, body piercing, jewelry, ring, wedding band, fingernails, eyelashes, facial hair, beard, groin, armpit, scalp, skin, squames, dandruff, epithelial cells, seborrheic dermatitis, computers, mobile communication device, mobile phone, cell phone, cellular phone, tablet computer, smartphone, iPad, iPhone, text messaging, pollen, dust, fungi, mold, equipment contamination, nosocomial, cross infection, infectious disease transmission, surgical wound infection, bacterial load, and infection control.*

At the time of the search, the librarian established weekly alerts on the search topics and until March 2014, presented relevant results to the lead author.

Prior to the search, the medical librarian provided to the lead author the results of literature searches conducted for the 2010 edition of the Association of periOperative Registered Nurses (AORN) Recommended Practices for Surgical Attire. These articles had no time restriction. During the development of this edition, the authors also requested supplementary literature searches and additional literature that either did not fit the original search criteria or was discovered during the evidence-appraisal process. The time restriction was not considered in these subsequent searches. Relevant guidelines from government agencies and standards-setting bodies also were identified.

Inclusion criteria were research and non-research literature in English, complete publications, relevance to the key questions, and publication dates within the time restriction unless none were available. Excluded were non-peer-reviewed publications; literature that examined the use of sterile gowns, drapes, and masks worn for maintaining sterile technique; low-quality evidence when higher quality evidence was available; and literature outside the time restriction when literature within the time restriction was available.

See Figure 1 in the original guideline document for a flow diagram of literature search results.

### Number of Source Documents

123 full-text sources were cited in the guideline.

### Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

### Rating Scheme for the Strength of the Evidence

I: Randomized controlled trial (RCT) or experimental study, systematic review of all RCTs

II: Quasi-experimental study, systematic review of quasi-experimental studies or combination of quasi-experimental and RCTs

III: Non-experimental studies, qualitative studies, systematic review of non-experimental studies, combination of non-experimental, quasi-experimental, and RCTs, or any or all studies are qualitative

IV: Clinical practice guidelines, position or consensus statements

V: Literature review, expert opinion, case Report, community standard, clinician experience, consumer experience, organizational experience (quality improvement, financial)

## Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

## Description of the Methods Used to Analyze the Evidence

Articles identified by the search were provided to the project team. The team consisted of the lead author, a co-author, five members of the Guidelines Advisory Board, and two evidence appraisers. The lead author and the evidence appraisers reviewed and critically appraised each article using the Association of periOperative Registered Nurses (AORN) Research or Non-Research Evidence Appraisal Tools as appropriate. The literature was independently evaluated and appraised according to the strength and quality of the evidence. Each article was then assigned an appraisal score.

Notably, much of the evidence related to surgical attire is not recent evidence. There are no randomized controlled trials (RCTs) or systematic reviews that show a direct causal relationship between surgical attire and surgical site infection (SSI). There are many confounding variables that affect a patient's risk for SSI, and this makes it extraordinarily difficult to identify surgical attire as a singular source of SSIs. It is a well-accepted scientific principle that increased numbers of microorganisms in the perioperative environment will increase the patient's risk for SSI. It is unnecessary, and it may be unethical, for researchers to perform new studies for the sole purpose of demonstrating this recognized concept.

## Methods Used to Formulate the Recommendations

Expert Consensus

## Description of Methods Used to Formulate the Recommendations

The methodology of the research and non-research evidence used to support this document was critically evaluated by the authors for validity and generalizability to current practice. The collective evidence supporting each intervention within a specific recommendation was summarized by the authors, and the Association of periOperative Registered Nurses (AORN) Evidence Rating Model was used to rate the strength of the evidence. Factors considered in the review of the collective evidence were the quality of evidence, the quantity of similar evidence on a given topic, and the consistency of evidence supporting a recommendation.

## Rating Scheme for the Strength of the Recommendations

1: Strong Evidence: Interventions or activities for which effectiveness has been demonstrated by strong evidence from rigorously-designed studies, meta-analyses, or systematic reviews, rigorously-developed clinical practice guidelines, or regulatory requirements

- Evidence from a meta-analysis or systematic review of research studies that incorporated evidence appraisal and synthesis of the evidence in the analysis
- Supportive evidence from a single well-conducted randomized controlled trial
- Guidelines that are developed by a panel of experts, that derive from an explicit literature search methodology, and include evidence appraisal and synthesis of the evidence.

1: Regulatory Requirement: Federal law or regulation

2: Moderate Evidence: Interventions or activities for which the evidence is less well established than for those listed under "1: Strong Evidence"

- Supportive evidence from a well-conducted research study
- Guidelines developed by a panel of experts which are primarily based on the evidence but not supported by evidence appraisal and synthesis of the evidence
- Non-research evidence with consistent results and fairly definitive conclusions

3: Limited Evidence: Interventions or activities for which there are currently insufficient evidence or evidence of inadequate quality.

- Supportive evidence from a poorly conducted research study
- Evidence from non-experimental studies with high potential for bias
- Guidelines developed largely by consensus or expert opinion
- Non-research evidence with insufficient evidence or inconsistent results
- Conflicting evidence, but where the preponderance of the evidence supports the recommendation

4: Benefits Balanced with Harms: Selected interventions or activities for which the Association of periOperative Registered Nurses (AORN) Recommended Practices Advisory Board (RPAB) is of the opinion that the desirable effects of following this recommendation outweigh the harms.

5: No Evidence: Interventions or activities for which no supportive evidence was found during the literature search completed for the recommendation.

- Consensus opinion

## Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

## Method of Guideline Validation

External Peer Review

Internal Peer Review

## Description of Method of Guideline Validation

The Guideline for Surgical Attire has been approved by the Association of periOperative Registered Nurses (AORN) Guidelines Advisory Board. It was presented as a proposed guideline for comments by members and others. The guideline is effective November 15, 2014.

## Evidence Supporting the Recommendations

### Type of Evidence Supporting the Recommendations

The evidence rating is noted in brackets after each intervention in the original guideline document. Also see the original guideline document for the systematic review and discussion of evidence.

## Benefits/Harms of Implementing the Guideline Recommendations

### Potential Benefits

- Appropriate surgical attire and personal protective equipment (PPE) can provide a high level of cleanliness and hygiene within the perioperative environment and promote patient and worker safety.

- Reducing the patient's exposure to microorganisms that are shed from the skin and hair of perioperative personnel may reduce the patient's risk for surgical site infection (SSI).
- Refer to the original guideline document for more information concerning benefits of specific interventions.

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

- These recommendations represent the Association's official position on questions regarding optimal perioperative nursing practice.
- No attempt has been made to gain consensus among users, manufacturers, and consumers of any material or product.
- Compliance with the Association of periOperative Registered Nurses (AORN) guideline is voluntary.
- AORN's recommended practices are intended as achievable and represent what is believed to be an optimal level of patient care within surgical and invasive procedure settings.
- Although they are considered to represent the optimal level of practice, variations in practice settings and clinical situations may limit the degree to which each recommendation can be implemented.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Mobile Device Resources

Resources

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Safety

# Identifying Information and Availability

## Bibliographic Source(s)

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## Adaptation

Not applicable: The guideline was not adapted from another source.

## Date Released

2014

## Guideline Developer(s)

Association of periOperative Registered Nurses - Professional Association

## Source(s) of Funding

Association of periOperative Registered Nurses (AORN)

## Guideline Committee

Association of periOperative Registered Nurses (AORN) Guidelines Advisory Board

## Composition of Group That Authored the Guideline

*Lead Author:* Lisa Spruce, DNP, RN, ACNS, ACNP, ANP, CNOR, Director of Evidence-based Perioperative Practice, AORN Nursing Department, Denver, Colorado

*Co-author:* Sharon A. Van Wicklin, MSN, RN, CNOR, CRNFA, CPSN, PLNC, Perioperative Nursing Specialist AORN Nursing Department, Denver, Colorado

*Contributing Author:* Ramona Conner, MSN, RN, CNOR, Manager, Standards and Guidelines, AORN Nursing Department, Denver, CO

*Team Members:* Paula Berrett, BS, CRCST, Utah Valley Regional Medical Center, Provo, Utah, International Association of Healthcare Central Service Material Management liaison to the AORN Guidelines Advisory Board; Angela Hewett, MD, MS, University of Nebraska Medical Center, Omaha, Nebraska, Society for Healthcare Epidemiology of America liaison to the AORN Guidelines Advisory Board; Antonia B. Hughes, MA, BSN, RN, CNOR, Perioperative Education Specialist, Baltimore Washington Medical Center, Glen Burnie, Maryland; Deborah Mulloy, PhD, RN, CNOR, Brigham & Womens Hospital, Newtonville, Massachusetts; Janice A. Neil, RN, PhD, American Association of Colleges of Nursing Leadership Fellow, Associate Professor and Chair, Department of Undergraduate Nursing Science, East Carolina University College of Nursing, Greenville, North Carolina; Marcia R. Patrick, MSN, RN, CIC, Association for Professionals in Infection Control and Epidemiology liaison to the AORN Guidelines Advisory Board and Independent Consultant, Tacoma, Washington

## Financial Disclosures/Conflicts of Interest

No financial relationships relevant to the content of this guideline have been disclosed by the authors, planners, peer reviewers, or staff.

## Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

## Guideline Availability

Electronic copies: Available to subscribers from the [Association of periOperative Nurses Web \(AORN\) site](#) .

Print copies: Available for purchase from the [AORN Web site](#) .

## Availability of Companion Documents

The following is available:

- Surgical attire evidence table. 2014. 11 p. Electronic copies: Available from the [Association of periOperative Nurses \(AORN\) Web site](#) .

Additional implementation tools, including clinical FAQ's, webinars, online learning modules, videos, community discussions and journal articles are available from the [AORN Web site](#) .

In addition, an AORN Guidelines for Perioperative Practice eBook mobile app is available from the [AORN Web site](#) .

## Patient Resources

None available

## NGC Status

This NGC summary was completed by ECRI Institute on January 9, 2015. The information was verified by the guideline developer on February 25, 2015.

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